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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,101	11/18/2003	Jack Y. Peng	27140.010	9904

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EXAMINER

ALEXANDER, MICHAEL P

ART UNIT PAPER NUMBER

1742

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/718,101	PENG ET AL.	
	Examiner	Art Unit	
	Michael P. Alexander	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

Claim(s) 1-22 is/are pending.

Claims 13-22 are free from art rejection.

#### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on <sup>5/17/06</sup>\*\*\* has been entered.

#### ***Claim Objections***

Claim 1 is objected to because of the following informalities: "said framed-mixture" in step c lacks antecedent basis. Appropriate correction is required.

Claim 14 is objected to because of the following informalities: "said Controlled environment" should be changed to – said controlled environment--. Appropriate correction is required.

Claim 18 is objected to because of the following informalities: "bellow" in the last line should be changed to – below--. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

Claims 1-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

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one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 1, the specification does not disclose a "solid framed-billet" and the specification does not disclose "wherein said matrix metal powder does not undergo liquidization during the entire processes of said method of producing a frame-metal-matrix composite". Claims 2-22 are rejected in that they depend from claim 1.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-5, 7 and 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Roszler (US 2,027,377) in view of the ASM Handbook, vol. 7, as an evidence of inherency.

Regarding claim 1, Roszler teaches (cols. 2-3) a method of producing a framed-metal-matrix-composite-sheet from a powder mixture, said method comprising: producing said powder mixture by mixing atomized aluminum (i.e. matrix metal powder) and boron carbide grit or powder (i.e. at least one reinforcement material); loading said powder mixture into a metal frame to form a framed mix (col. 2 lines 36-38); and hot rolling the framed mixture in eight or more passes (col. 3 lines 1-15). The examiner considers that all of the rolling passes until the penultimate pass would be the claimed step c and the final pass would be the claimed step d.

With respect to the limitation on the theoretical density in step c of claim 1, it is well known as evidenced by Table 1 of page 405 of the ASM Handbook that hot rolling produces about 100% theoretical density, therefore the seven or more hot rolling steps (prior to the last rolling step) of Roszler would inherently create a greater than about 98% theoretical density.

With respect to the limitation that the metal matrix powder does not liquidize during the entire process in step a of claim 1, Roszler teaches a maximum temperature of 850 degrees F, which would be well below the melting point of the atomized aluminum powder.

With respect to the limitation that the rolling pass in step d of claim 1 would not form edge cracks, the Examiner asserts that the sheet produced by the method of Roszler would inherently meet the claimed limitation because Roszler does not specify forming edge cracks and there is nothing in the disclosure of Roszler that would lead one of ordinary skill in the art to believe that edge cracks would be present.

Regarding claim 2, Roszler teaches (col. 2 line 24) aluminum.

Regarding claims 4-5, Roszler teaches (col. 2 line 23) boron carbide.

Regarding claim 7, Roszler teaches (col. 2 lines 20-30) 35% boron carbide and 65% aluminum.

Regarding claim 9, Roszler teaches (col. 2 line 24) aluminum and does not specify the necessity of any alloying elements.

Regarding claims 10-12, Roszler teaches (Figure) a perimeter frame, a two-sided frame and an encapsulating box.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roszler (US 2,027,377) in view of the ASM Handbook, vol. 7, as applied to claims 1-2, 4-5, 7 and 9-12 above, and further in view of (no additional reference).

Regarding claim 3, Roszler does not specify that size of the metal matrix powder. However, ASM Handbook teaches (page 495 col. 2) that minimizing the particle size causes more rapid shrinkage and densification during sintering. It would have been obvious to one of ordinary skill in the art to modify the method of Roszler by minimizing the particle size in order to cause more rapid shrinkage and densification during sintering as taught by the ASM Handbook, vol. 7.

Regarding claim 6, Roszler does not specify that the size of the reinforcement powder. However, ASM Handbook teaches (page 495 col. 2) that minimizing the

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particle size causes more rapid shrinkage and densification during sintering. It would have been obvious to one of ordinary skill in the art to modify the method of Roszler by minimizing the particle size in order to cause more rapid shrinkage and densification during sintering as taught by the ASM Handbook, vol. 7.

Regarding claim 8, Roszler does not specify the addition of alloying elements to the aluminum powder. However, the ASM Handbook teaches (Tables 10 and Table 12) that alloyed aluminum would have a higher strength. It would have been obvious to one of ordinary skill in the art to modify the method of Roszler by adding alloying elements in order to achieve a higher strength as taught by the ASM Handbook.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 10:00 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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